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Lockheed Martin Corporation
Corporate Environment, Safety & Health
West Coast Projects Office
2550 North Hollywood Way, 3rd Floor, Burbank, CA 91505-1055
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Via Federal Express CAY0799/292 WBS #48720

July 28, 1999

Mr. Gerard J. Thibeault Executive Officer California Regional Water Quality Control Board Santa Ana Region 3737 Main Street, Suite 500 Riverside, California 92501-3339

Dear Mr. Thibeault:

Subject: June 1999 Data Report

Water Supply Contingency Plan Production Well Sampling Program Crafton-Redlands Plume Project

In compliance with the approved Water Supply Contingency Plan, enclosed please find one copy of the **June 1999, Production Well Sampling Program** report prepared by HSI-Geotrans for the Lockheed Martin Corporation. This report presents analytical results from samples collected at Bunker Hill Basin Production Wells in June of 1999. Laboratory Quality Assurance/Quality Control documentation is in Attachment B which is also enclosed for your review.

Should you have any questions, comments, or request, please contact Tom Blackman at (818) 847-0791 or John Hemmans at (818) 847-0191.

Sincerely,

Carol A. Yuge

Enclosures

CAY:JH:mg

cc: See Attached Distribution List

Gerard Thibeault July 28, 1999 CAY0799/292 Page 2

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July 29, 1999

Lockheed Martin Corporation West Coast Project Office 2550 N. Hollywood Way, 3<sup>rd</sup> Floor Burbank, California 91505

Attention: Mr. John Hemmans

**Project Coordinator** 

Subject:

June 1999 Data Report

Water Supply Contingency Plan Production Well Sampling Program Crafton-Redlands Plume Project

Dear Mr. Hemmans:

This report presents a summary of field procedures, protocols, and results of the Water Supply Contingency Plan production well sampling for the month of June 1999. The Water Supply Contingency Plan (WSCP) was prepared by Lockheed Martin Corporation and submitted to the State of California Regional Water Quality Control Board (RWQCB) Santa Ana Region on September 30, 1996. The plan was conditionally approved by the RWQCB in a letter dated March 6, 1997. The WSCP for the Crafton-Redlands Plume was prepared to address maintenance of water supply to purveyors in the event that wells became impacted with trichloroethene (TCE) from the Crafton-Redlands TCE Plume. A summary of key dates and WSCP sampling program evolution is provided on Table 1.

The locations of the WSCP wells and analytical results for the June 1999 sampling event for TCE and perchlorate are shown on Figures 1 and 2, respectively. Table 2 presents a summary of analytical tests performed on each WSCP well and water system sampling point. The sampling frequency of each well is once a month for the first year. Changes in the sampling frequency, if required are based on the analytical results as outlined in the WSCP TCE and perchlorate decision matrices, provided as Figures 3 and 4, respectively. The perchlorate decision matrix was presented in the *Perchlorate Work Plan and Schedule*, which was submitted, to the RWQCB on August 15, 1997. The RWQCB approved the Perchlorate Work Plan on

October 31, 1997. Table 3 presents a summary of the wells sampled twice monthly according to the decision matrices.

#### RESULTS

A summary of the analytical results for the June 1999 WSCP sampling event for TCE and perchlorate is shown on Figures 1 and 2, respectively, and presented on Table 4. Available groundwater elevation data is provided on Table 5. The water sampling field forms are provided in Attachment A. The chain-of-custody, laboratory data sheets, and Level 1 Modified laboratory quality assurance/quality control (QA/QC) documentation is provided in Attachment B.

#### Trichloroethene

Four groundwater samples collected in June 1999 met or exceeded  $2/5^{th}$  the MCL for TCE (2.0  $\mu g/L$ ) including; Gage 26-1 (11  $\mu g/L$ ), Gage 27-1 (9.5  $\mu g/L$ ), Gage 29-2 (4.8  $\mu g/L$ ), and Gage 29-3 (7.3  $\mu g/L$ ). The TCE impacts at Gage 29-2 and Gage 29-3 are wholly or partially attributed to the Norton AFB plume, thus, more frequent sampling will not be implemented.

Please note that in May 1999, Gage Wells 26-1 and Gage 27-1 were placed into TCE treatment. In August 1999, redundant WSCP sampling for these wells will be discontinued. The wells will continue to be sampled by the City of Riverside under the approved Operations and Maintenance Plan.

#### Perchlorate

In the June WSCP sampling, perchlorate was detected at or above 75 percent (13.5  $\mu$ g/L) of the PAL in one City of Loma Linda well (Richardson #1), and three City of Riverside wells (Gage 29-2, Gage 29-3, and Gage 51-1). Gage 29-2 and Gage 29-3 are currently being sampled on a twice a month basis. The June 3, 1999 sample from Richardson #1 and the June 4, 1999 sample from Gage 51-1 had a perchlorate concentration that exceeded 75 percent of the PAL. In accordance to the perchlorate decision matrix (Figure 4), a confirmation sample was collected from Richardson #1 and Gage 51-1 on June 17, and 28, 1999, respectively. The perchlorate confirmation sampling results from both the Richardson #1 and Gage 51-1 wells exceeded 75 percent of the perchlorate PAL. Thus, beginning in July 1999, Richardson #1 and Gage 51-1 will be sampled twice a month for a period of three months at which time the average perchlorate concentration will be evaluated to determine future sample frequency.

## Perchlorate: Twice-Monthly Sampling Evaluation

As of June 1999, three wells are sample on a twice a month basis, if active (Gage 29-2, Gage 29-3, and COLL Mountain View #2). The three-month twice-monthly sampling cycle concluded on June 30, 1999. For the past three months (April 1 through June 30, 1999), the average perchlorate concentrations for the wells sampled on a twice-monthly basis are presented on Table 6.

Six samples were collected from Gage 29-2 during the April 1 through June 30, 1999 sampling cycle. The average perchlorate concentration for the six samples collected from Gage 29-2 is 22.5  $\mu$ g/L. This exceeds 75 percent of the perchlorate PAL, thus, Gage 29-2 will continue to be sampled on a twice-monthly basis, if active.

Only one sample was collected from Gage 29-3 during the April 1 through June 30, 1999 three-month sampling cycle because the well was off-line for most of the period. The perchlorate concentration for the one sample collected was 45  $\mu$ g/L thus, Gage 29-3 will continue to be sampled on a twice-monthly basis, if active.

A total of six samples were collected from the COLL Mountain View #2 between April 1 and June 30, 1999. The average perchlorate concentration for the six samples analyzed from COLL Mountain View #2 is 6.6  $\mu$ g/L (Table 6). During the past three-month sampling cycle the average perchlorate concentration in Mountain View #2 was below 13.5 (75 percent of the PAL). In accordance with the WSCP decision matrix for perchlorate, Mountain View #2 should be sampled once a month, however, Lockheed Martin will continue to sample Mountain View #2 on a twice monthly schedule in accordance to the DHS-approved perchlorate blending plan for continued use of this well.

Based on the June 1999 sample results, two additional wells (COLL Richardson #1 and Gage 51-1) will be added to the list of wells sampled on a twice-monthly basis. At the conclusion of the next three month sampling cycle (September 30, 1999), the perchlorate concentrations in COLL Richardson #1, COLL Mountain View #2, Gage 51-1, Gage 29-2, and Gage 29-3 will be evaluated to determine the future sampling frequency.

## **CLOSING**

HSI GeoTrans greatly appreciates being of continued service to Lockheed Martin Corporation on this project. Should you have any questions or comments, please do not hesitate to call.

Sincerely,

**HSI GEOTRANS** 

Roy J. Marroquin

Project Manager

James C. Norman, R.G., C.HG.

**Project Director** 

**TABLES** 

#### TABLE 1

#### KEY PROJECT DATES AND WSCP SAMPLING PROGRAM EVOLUTION

September 30, 1996, Lockheed Martin submitted the Water Supply Contingency Plan (WSCP) to the RWQCB – Santa Ana Region.

March 6, 1997, the RWQCB conditionally approved the WSCP, which included sampling eight production wells (City of Loma Linda Richardson #1, Richardson #2, Mountain View #1, Mountain View #2, Victoria Farms Mutual Water Company Wells #1 and #3, and Southern California Edison #1 and #2).

June 1997, Victoria Farms Mutual Water Company was connected to City of San Bernardino Water. Pumping ceased at VFMWC #1 and #3, and the two wells were removed from the program.

June 1997, sampling of SCE #1 was discontinued due to sampling logistics. The WSCP consists of five wells, including COLL Mountain View #1 and #2, COLL Richardson #1 and #2, and SCE #2 (AUX).

August 1997, the WSCP was expanded due to the detection of perchlorate in municipal supply wells in the Bunker Hill Basin. Twenty-six wells were added to the WSCP including nineteen City of Riverside wells, five City of Redlands wells, and two Loma Linda University wells, for a total of 31 wells.

October 1997, three City of Riverside water system sampling points were added to the WSCP, including the Gage system pipeline (Gage Delivery), the Waterman system pipeline (Iowa Booster), and the sampling station measuring outflow from the Linden and Evans Reservoirs (7<sup>th</sup> & Chicago).

March 1998, two City of Loma Linda water system sampling points were added to the WSCP, including the Mountain View system pipeline (Mountain View Blend at Lawton) and the Richardson system pipeline (Richardson Blend).

June 1998, one City of Riverside irrigation water system sampling point (Gage Arlington) and one additional City of Loma Linda water system sampling point (Mountain View Blend at Timoteo) were added to the WSCP.

December 1998, COLL Richardson #3 Well Added to WSCP Sampling Program.

TABLE 2
WSCP PRODUCTION WELL SAMPLING PROGRAM

HSI#	Well Name	Perchlorate	TCE
City of Loma Linda	- Well Name	reiciliorate	ICE
692	Mountain View #2	X	X
693	Richardson #1	- Î	^X
694	Richardson #2	X	<u>^</u>
707	Richardson #3	<del>\\ \x</del>	^
	/ater System Sampling Points		
			· · · · · · · · · · · · · · · · · · ·
3016	Mountain View - Lawton	X	X
2968	Richardson Blend		X
	r (formerly Southern California Edison)		
554	SCE#2(AUX)	Х	X
Loma Linda Universit			
267	LLUniv Anderson #2	X	
717	LLUniv Anderson #3	X	
City of Riverside (Ga			
252	Gage#26-1	X	X
258	Gage#27-1	X	X
259	Gage#27-2	X	X
260	Gage#29-1	X	Χ
219	Gage#29-2	X	X
220	Gage#29-3	X	X
218	Gage#30-1	X	X
214	Gage#31-1	X	X
215	Gage#46-1	X	X
253	Gage#51-1	X	X
216	Gage#56-1	X	X
257	Gage#66-1	X	X
644	Gage#92-1	X	Χ
641	Gage#92-2	X	X
642	Gage#92-3	X	Х
City of Riverside (Wa	terman System)		
273	Hunt#6	X	
271	Hunt#10	X	
272	Hunt#11	X	
City of Riverside Water	er System Sampling Points		
2946	Iowa Booster (Waterman)	X	Х
2947	Gage Delivery (Gage)	X	Χ
2948	7th & Chicago (Reservoir)	X	X
3018	Gage Arlington	X	X
ity of Redlands			
542	COR Church St	X	
2673	COR#38	X	
535	COR Mentone Acres	X	
29	COR Orange st	X	
74	CORRees	X	X

Notes:

TCE = Trichloroethene

Perchlorate analyzed using DHS Method (EPA 300.0 Modified)

TCE analyzed using EPA Method 502.2

TABLE 3

# WSCP PRODUCTION WELL SAMPLING PROGRAM JUNE 1999 WELLS SAMPLED TWICE MONTHLY

HSI#	Well Name	Perchlorate	TCE
City of Loma Linda			
692	Mountain View #2	X	
City of Riverside (Gage System)			
219	Gage #29-2	x	
220	Gage #29-3	X	

#### Notes:

TCE = Trichloroethene

Perchlorate analyzed using DHS Method (EPA 300.0 Modified).

TCE analyzed using EPA Method 502.2.

In June Gage 29-3 was sampled only once because the well was off-line part of the month.

#### TABLE 4

# WSCP PRODUCTION WELL SAMPLING PROGRAM JUNE 1999 DATA RESULTS

HSI#	Well Name	Sample Date	Perchlorate (ppb)  Del Mar	TCE (ppb) Del Mar
City of Loma Li	nda		Tagatat 1997	
692	Mountain View #2	6/3/99	7.1	ND(0.5)
692	Mountain View #2*	6/14/99	5.7	NA NA
693	Richardson #1	6/3/99	16	ND(0.5)
693	Richardson #1	6/17/99	14	NA
694	Richardson #2	NS	NS	NS
707	Richardson #3	6/3/99	ND(4)	ND(0.5)
707	MUN-743	6/3/99	ND(4)	ND(0.5)
	nda Water System Sampling Points	to sale in		<u> </u>
2967	Mountain View Blend-Lawton	6/3/99	5.6	ND(0.5)
2968	Richardson Blend	6/3/99	5.9	ND(0.5)
	Power (formerly Southern California			
554	SCE#2(AUX)	6/3/99	ND(4)	ND(0.5)
Loma Linda Un				
267	LLUniv Anderson #2	6/3/99	ND(4)	NA
717	LLUniv Anderson #3	6/3/99	ND(4)	NA NA
	e (Gage System)			
252	Gage#26-1	6/3/99	8.8	11
258	Gage#27-1	6/4/99	7.9	9.5
258	MUN-744	6/4/99	8.0	8.9
259	Gage#27-2	6/4/99	9.2	1.7
260	Gage#29-1	6/4/99	9.7	0.71
219	Gage#29-2	6/4/99	29	4.8
219	Gage 29-2*	6/14/99	27	NA
220	Gage#29-3	NS	NS	NS
220	Gage#29-3*	6/14/99	45	7.3
220	MUN-745	6/14/99	45	7.3
218	Gage#30-1	6/3/99	ND(4)	ND(0.5)
214	Gage#31-1	6/3/99	ND(4)	ND(0.5)
215	Gage#46-1	6/3/99	5.5	0.58
253	Gage#51-1	6/4/99_	14	ND(0.5)
253	Gage#51-1	6/28/99	15	NA NA
216	Gage#56-1	6/3/99	ND(4)	ND(0.5)
257	Gage#66-1	6/4/99	12	ND(0.5)
644	Gage#92-1	6/3/99	13	1.0
641	Gage#92-2	6/3/99	ND(4)	ND(0.5)
642	Gage#92-3	6/3/99	ND(4)	ND(0.5)
	(Waterman System)			
273	Hunt#6	NS	NS	NA
271	Hunt#10	NS	NS	NA
272	Hunt#11	NS	NS	NA
	Water System Sampling Points			
2946	Iowa Booster (Waterman)	6/4/99	ND(4)	ND(0.5)
2947	Gage Delivery (Gage)	6/4/99	6.1	ND(0.5)
2948	7th & Chicago (Reservoir)	6/4/99	4.8	ND(0.5)
3018	Gage Arlington	6/4/99	6.6	NA
City of Redlands				
542	COR Church St <sup>a</sup>	6/14/99	5.9	NA
2673	COR#38ª	NS	NS	NA
535	COR Mentone Acres <sup>a</sup>	NS	NS	NA
29	COR Orange St <sup>a</sup>	6/2/99	ND(4)	NA NA
74	COR Rees	6/2/99	ND(4)	ND(0.5)
7.4	MUN-742	6/2/99	ND(4)	ND(0.5)

#### Notes:

= Twice-monthly sampling result

≠ Well sampled on quarterly basis, if active

ND(4) = Not detected at the specified limit

MUN = Duplicate sample collected from the well listed directly above

NA = Not Analyzed

NS = Not Sampled
TCE = Trichloroethene

Perchlorate analyzed using DHS Method (EPA 300.0 Modified)

TCE analyzed using EPA Method 502.2

**TABLE 5** 

# SUMMARY OF WATER LEVEL MEASUREMENTS JUNE 1999 SAMPLING EVENT

il:			Depth to	Measuring Point	Groundwater		
HSI#	Well Name	Measure Date	Water	Elevation	Elevation	Comments	
City of Loma Linda							
692	Mountain View #2	06/02/99	181	1085	904	Pumping	
693	Richardson #1	06/02/99	148	1077	929	Pumping	
694	Richardson #2	NA NA	NM	1078	NM	NM	
707	Richardson #3	06/02/99	193	1085	892	Pumping	
Mountain \	liew Power (formerly Sou		dison)				
554	SCE#2(AUX)	NM	NM	1100.00	NM	Pumping	
Loma Lind	a University						
267	LLUniv Anderson #2	NM	NM	1075	NM	Pumping	
717	LLUniv Anderson #3	NM	NM	1070	NM	Pumping	
City of Rive	erside (Gage System)						
252	Gage#26-1	06/01/99	85.60	1045.33	959.73	Pumping	
258	Gage#27-1	06/01/99	82.20	1044.64	962.44	Pumping	
259	Gage#27-2	06/01/99	82.0	1044.64	962.64	Pumping	
260	Gage#29-1	06/01/99	87.0	1044.43	957.43	Pumping	
219	Gage#29-2	06/01/99	65.0	1046.31	981.31	Static	
220	Gage#29-3	06/01/99	64.5	1048.75	984.25	Static	
218	Gage#30-1	06/01/99	179.9	1054.17	874.27	Pumping	
214	Gage#31-1	06/01/99	68.0	1054.64	986.64	Static	
215	Gage#46-1	06/01/99	102.0	1065.50	963.50	Pumping	
253	Gage#51-1	06/01/99	162.5	1044.64	882.14	Pumping	
216	Gage#56-1	06/01/99	125.0	1065.50	940.5	Static	
257	Gage#66-1	06/01/99	128.2	1044.85	916.65	Pumping	
644	Gage#92-1	06/01/99	140.9	1047.78	906.88	Pumping	
641	Gage#92-2	06/01/99	177.0	1053.38	876.38	Pumping	
642	Gage#92-3	06/01/99	165.9	1058.78	892.88	Pumping	
City of Riverside (Waterman System)							
273	Hunt#6	NM	NM	1015.5	NM	Pumping	
271	Hunt#10	NM	NM	1017	NM	Pumping	
272	Hunt#11	NM	NM	1015.7	NM	Pumping	
City of Red	City of Redlands						
542	COR Church St	Jun-99	92.0	1344.8	1252.8	Static	
2673	COR#38	Jun-99	90.0	NA	NA	Pumping	
535	COR Mentone Acres	Jun-99	144.0	1506.4	1362.4	Static	
29	COR Orange St	Jun-99	149.0	1282	1133.0	Static	
74	COR Rees	Jun-99	208.0	1490	1282.0	Pumping	

## Notes:

All measurements reported in feet below measuring point (ft-bmp)

Water level measurements for all City of Loma Linda, City of Riverside, and City of Redlands wells were obtained by purveyor personnel. Elevations given in feet above mean sea level (ft-msl)

NM=Not measured

NA=Data not available

Static water levels were allowed to recover a minimum of 30 minutes to obtain a static water level measurement

**TABLE 6** 

# TWICE MONTHLY SAMPLING PROGRAM THREE MONTH DATA AND AVERAGE PERCHLORATE CONCENTRATIONS

Well Name	Sample Date	Sample Result	75% of PAL	PAL	
Gage29-2	4/5/99	18	13.5	18	
Gage29-2	4/16/99	21	13.5	18	
Gage29-2	5/3/99	19	13.5	18	
Gage29-2	5/17/99	21	13.5	18	
Gage29-2	6/4/99	29	13.5	18	
Gage29-2	6/14/99	27	13.5	18	
Average 4/1/99 - 6/30/99		22.5			
Gage29-3	06/14/99	45	13.5	18	
Average 4/1/99 - 6/30/99*		45.0			
COLL Mountain View #2	4/1/99	7.3	13.5	18	
COLL Mountain View #2	4/21/99	7.1	13.5	18	
COLL Mountain View #2	5/4/99	7.6	13.5	18	
COLL Mountain View #2	5/17/99	5	13.5	18	
COLL Mountain View #2	6/3/99	7.1	13.5	18	
COLL Mountain View #2	Mountain View #2 6/14/99		13.5	18	
Average 4/1/99 - 6/30/99 6.6					

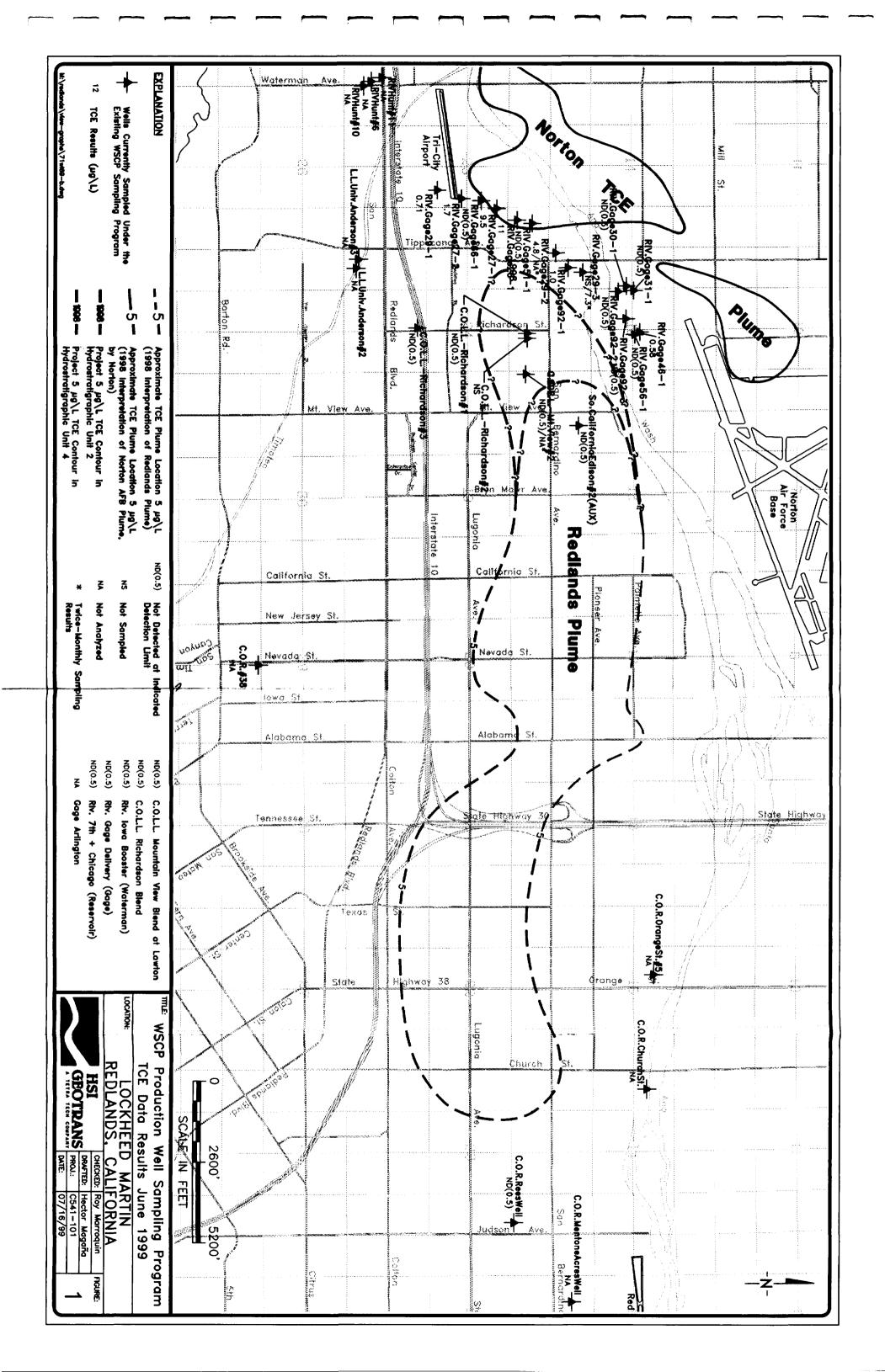
## Notes:

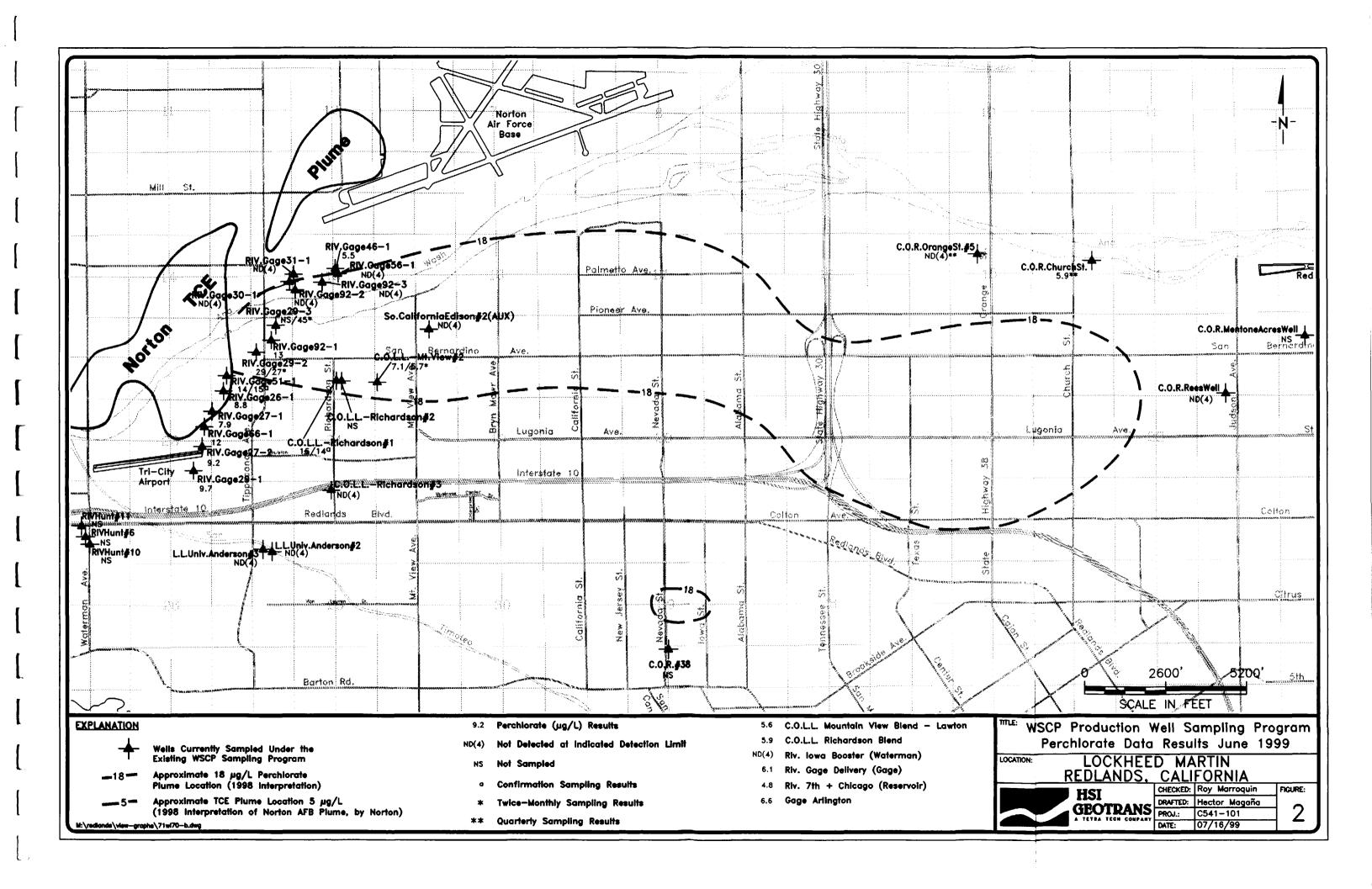
All concentrations are micrograms per liter.

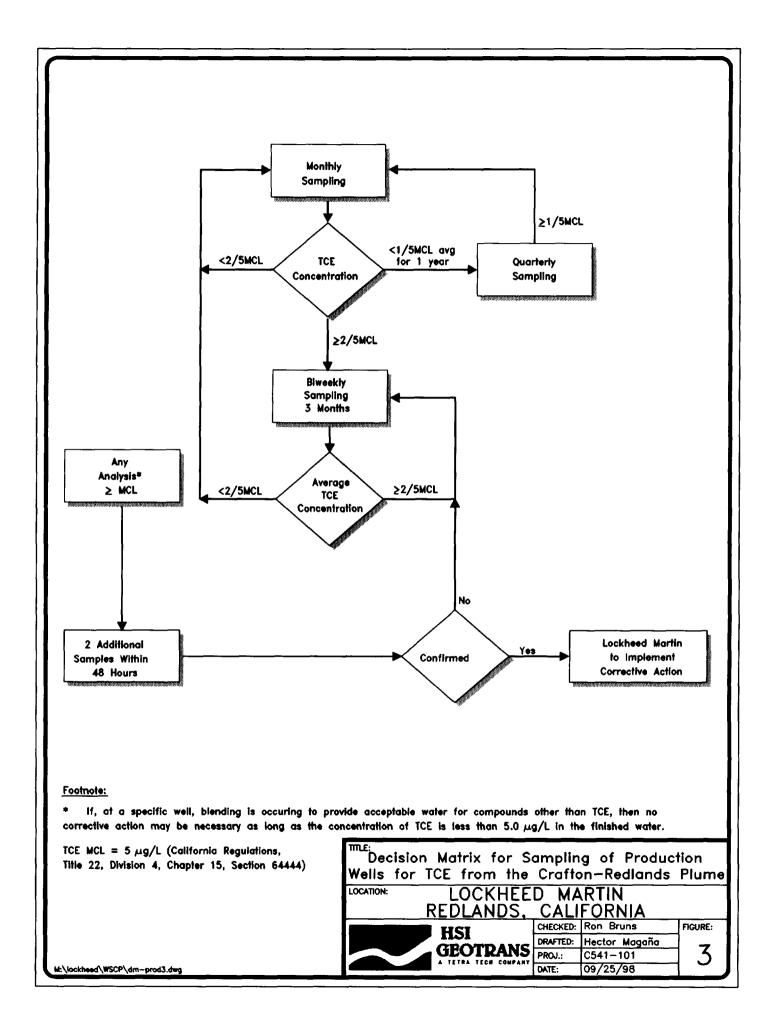
PAL = Provisional Action Level for perchlorate

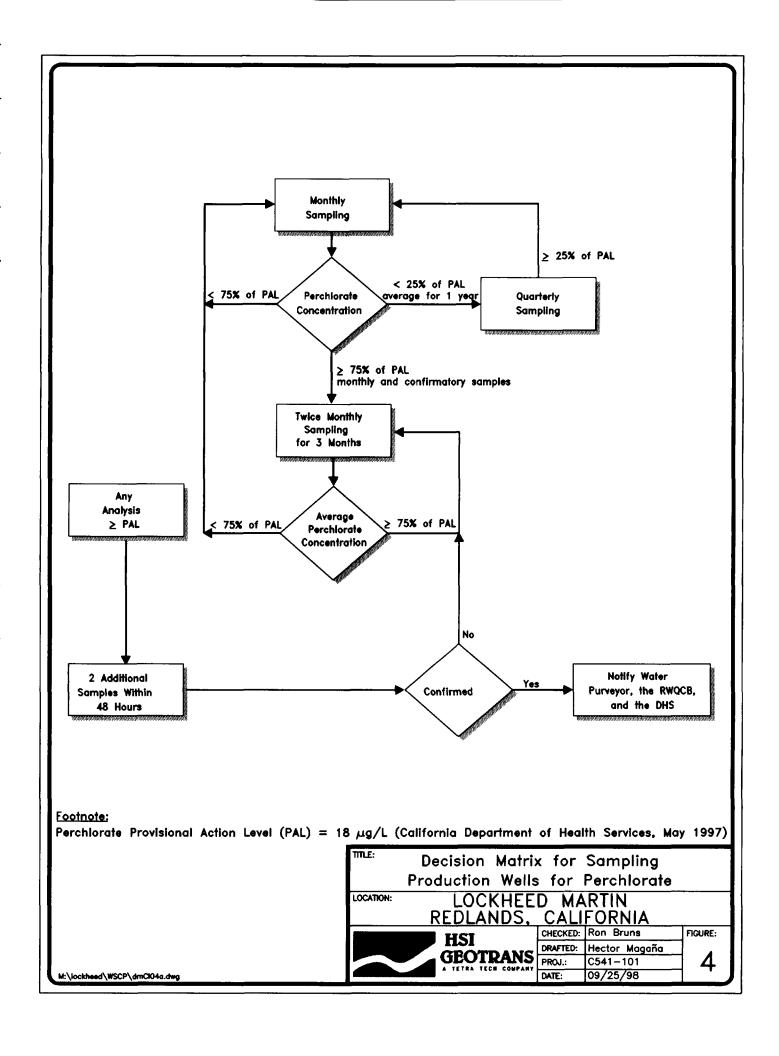
<sup>\*</sup> Well sometimes off-line between 4/1/99 - 6/30/99

# **FIGURES**









# ATTACHMENT A GEOLIS FIELD FORMS

# **ATTACHMENT A**

GEOLIS FIELD FORMS (Available Upon Request)

# **ATTACHMENT B**

CHAIN-OF-CUSTODY RECORDS AND
LABORATORY DATA SHEETS
QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION

# **ATTACHMENT B**

CHAIN-OF-CUSTODY RECORDS AND
LABORATORY DATA SHEETS
QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION
(Available Upon Request)